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ABSTRACT

This is the teacher's guide to accompany the student guide which together comprise one of five computer-oriented environmental/energy education units. This unit is organized around a computerized data base of information related to global energy use. The data is organized on a country-by-country basis for the 83 largest countries in the world. For each country, data have been stored on 24 variables, such as use and production of energy, per/capita income, energy reserves, and so on. Using the computer program, students are guided through a series of inquiries into the data base. The data base may be expanded by the teacher. These materials are designed for grades 9 through 14 and are appropriate for Social Studies and Environmental Education or Science courses. This teacher's guide presents: (1) an introduction to the unit; (2) background information on the program and how to use it; (3) student exercises; (4) information sources; and (5) program listing. (MR)

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Prospective users of this manual are urged to first run the sample simulation program provided in order to determine any needed or desirable adjustments prior to use.

September 1975

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INTRODUCTION TO THE UNIT

Unit Description

Subject Areas: Social Studies, Environmental Education

Topic: Global Dimensions of the Energy Shortage

Abstract: This unit is organized around a computerized data base of information related to global energy use. The data is organized on a country-by-country basis for the 83 largest countries in the world. For each country, data has been stored on 24 variables, such as use and production of energy, per capita income, energy reserves, and so on.

Using the computer program, EARTH, students are guided through a series of inquiries into the data base. These inquiries are based on questions and hypotheses related to the global use of energy, such as "What factors are associated with high consumption of energy?" and "What are the current patterns and trends in energy use?"

The data base may be expanded by the teacher to allow further exploration into the factors associated with energy use and production.

Grade Level: 9-14

Computer Language: BASIC

Program Name: EARTH

Objectives

The primary objectives of this unit are:

1. To allow students to examine the energy crisis with a view to understanding the correlates of the program.
2. To allow students to examine data reflecting the nations of the world so they come to understand the global dimensions of the energy shortage.
3. To provide a hypothesis-testing system which is open-ended; that is, it allows the student to explore the data base in complete freedom after the initial exercises have been completed.

Overview of the Program EARTH and Its Options

The EARTH program is designed for use as an inquiry system with a data base involving 24 variables (from population and income figures to coal production and natural gas reserves) for 83 of the major countries of the world.

For inquiry students are given two options with program EARTH. Using the "Table" option, students may obtain a table for up to 5 variables at a time for any or all of the 83 countries. Using the "Rank" option, students may obtain an ordered listing (from high to low) on one variable. This option also allows the student to ask for a specified number of countries from the top or the bottom of the rank order list.

Using program EARTH, students should be encouraged to hypothesize, to invent questions, and to gather data for testing the hypothesis or answering the questions.

THE "EARTH" PROGRAM

Description of the Data Base

The data base used for student inquiry is, simply, the values of 24 variables for 83 countries. The specific variables, and the specific countries, are listed on pages 4-5. A complete listing of the data base can be found on pages 6-10. You will note that zeros have been entered for some values--zeros indicate "information not obtainable." If you find a source for any of this missing data, you may update the data base using the procedures in the next section.

List of Variables Stored for Each Country

<u>Variable Number</u>	<u>Data</u>
1	1971 population in millions
2	1971 population density per square kilometer
3	1963-1971 population increase rate, in %
4	Male life expectancy
5	Female life expectancy
6	Daily calorie consumption per capita
7	1968 national income in millions of dollars
8	1971 national income in millions of dollars
9	1968 energy production in million metric tons of coal equivalent
10	1971 energy production in million metric tons of coal equivalent
11	1968 energy consumption in million metric tons of coal equivalent
12	1971 energy consumption in million metric tons of coal equivalent
13	1968 energy consumption per capita in kilograms
14	1971 energy consumption per capita in kilograms
15	Coal reserves in million metric tons
16	1972 Coal production in thousand metric tons
17	Reserves of lignite and brown coal in million metric tons
18	1972 production of lignite and brown coal in thousand metric tons
19	Petroleum reserves in million metric tons
20	1972 production of petroleum in thousand metric tons
21	Natural gas reserves in thousand million cubic meters
22	1972 production of natural gas in million cubic meters
23	1971 production of electrical energy in million kilowatt hours
24	1971 production of manufactured gas in million cubic meters

List of Countries for Which Data Is Stored

1. Afghanistan	22. El Salvador	43. Korea	64. Southern Rhodesia
2. Algeria	23. Ethiopia	44. Laos	65. Spain
3. Argentina	24. Finland	45. Malaysia (West)	66. Sri Lanka
4. Australia	25. France	46. Mali	67. Sudan
5. Austria	26. Germany	47. Mexico	68. Sweden
6. Belgium	27. Ghana	48. Morocco	69. Switzerland
7. Bolivia	28. Greece	49. Netherlands	70. Syrian Arab Republic
8. Brazil	29. Guatemala	50. Nepal	71. Thailand
9. Bulgaria	30. Guinea	51. Niger	72. Turkey
10. Burundi	31. Haiti	52. Nigeria	73. Uganda
11. Canada	32. Hong Kong	53. Norway	74. United Kingdom
12. Chad	33. Hungary	54. Pakistan	75. United Republic of Tanzania
13. Chile	34. India	55. Peru	76. USA
14. China	35. Indonesia	56. Phillipines	77. USSR
15. Colombia	36. Iran	57. Poland	78. Upper Volta
16. Cuba	37. Iraq	58. Portugal	79. Viet Nam
17. Czechoslovakia	38. Israel	59. Romania	80. Yemen
18. Denmark	39. Italy	60. Rwanda	81. Yugoslavia
19. Dominican Republic	40. Ivory Coast	61. Saudi Arabia	82. Zaire
20. Ecuador	41. Japan	62. Senegal	83. Zambia
21. Egypt	42. Kenya	63. South Africa	

Complete Listing of Data Base

FOR ALL COUNTRIES

AND VARIABLES 1 2 3 4 5

VARIABLE

COUNTRY 71 POP. 71 DENS. POP. INCR. MLE EXH. PER. EXP.

AFGHANISTAN	17.49	27	0.3	37.5	37.5
ALGERIA	14.749	6	3.5	50.7	50.7
ARGENTINA	21.552	4	1.5	64.1	71.2
AUSTRALIA	14.713	2	1.9	67.9	74.2
AUSTRIA	7.456	89	.5	66.8	73.7
BELGIUM	9.473	317	.5	67.7	75.5
BOLIVIA	5.053	5	2.6	49.7	49.7
BRAZIL	95.443	11	2.8	60.7	60.7
BULGARIA	8.84	77	.7	68.8	72.7
BRUNDAI	3.615	130	2	35	38.5
CANADA	21.475	2	1.6	68.8	75.2
CHAD	3.2	3	2.3	29	35
CHILE	0.992	12	1.4	54.4	59.9
CHINA	787.176	82	1.8	50	50
COLOMBIA	21.772	19	3.2	44.2	46
CUBA	8.657	76	2.3	66.8	66.8
CZECHOSLOV.	14.5	113	.4	67.3	73.6
DENMARK	4.963	115	.7	70.8	75.7
DOM. REPUB.	4.182	86	2.9	57.2	58.7
ECUADOR	6.897	22	3.4	51	53.7
EGYPT	34.13	34	2.5	52.3	53.8
EL SALVADOR	3.647	170	0.7	54.6	60.4
ETHIOPIA	25.248	21	1.8	33.5	35.5
FINLAND	4.684	14	.4	65.4	72.6
FRANCE	51.25	94	.9	68.6	74.1
GERMANY	75.127	194	.7	67.6	73.6
GHANA	8.858	37	3	44	46
GREECE	8.85	67	.5	67.5	70.7
GUATEMALA	5.348	49	3.2	48.3	49.7
GUINEA	4.01	16	2.2	26	28
HAWAII	4.969	179	2	44.5	44.5
HONG KONG	7.049	3912	2.1	66.7	73.3
HUNGARY	10.351	111	.5	66.3	72.7
INDIA	550.374	166	2.2	41.9	40.6
INDONESIA	124.894	84	2.8	47.5	47.5
IRAN	29.782	17	3	50	50
IRAQ	9.75	22	3.2	51.6	51.6
ISRAEL	3.013	146	3	70.1	73.4
ITALY	54.073	190	.8	67.2	73.4
IVORY COAST	4.42	14	2.4	41	41
JAPAN	104.661	293	1.1	69.1	74.3

(listing for variables 4-5 continued)

KENYA	11.694	20	3.1	47.5	47.5
KOREA	46.198	210	2.4	57.7	57.7
LAOS	3.033	13	2.4	47.5	47.5
W. MALAYSIA	8.978	68	2.4	63.8	64.7
MALI	5.143	4	2.1	37.2	37.2
MEXICO	50.63	21	3.2	61	63.7
MOROCCO	15.234	34	2.2	50.5	50.5
NETHERLANDS	13.194	323	1.2	70.7	76.5
NEPAL	11.29	80	1.8	40.6	40.6
NIGER	4.126	3	2.7	41	41
NIGERIA	54.51	61	2.5	37.2	36.7
NORWAY	3.903	12	.8	71.1	76.8
PAKISTAN	116.593	140	16.7	53.7	48.8
PERU	14.015	11	3.1	32.6	35.5
PHILIPPINES	37.919	126	3	46.8	53.4
POLAND	327749	105	.8	66.9	72.8
PORTUGAL	9.037	98	0	65.3	71
ROMANIA	20.43	86	1.1	65.5	62.6
RWANDA	3.827	145	2.9	41	41
SA. ARABIA	7.945	4	2.7	44.3	42.3
SENEGAL	4.082	21	2.4	41	41
SO. AFRICA	22.092	18	3.1	49	49
S. RHODESIA	5.5	14	3.3	51.4	51.4
SPAIN	34.184	68	1.1	67.3	71.9
SRI LANKA	12.762	195	2.3	61.9	61.4
SUDAN	16.087	6	2.8	47.6	47.6
SWEDEN	7.684	.18	.8	71.9	76.5
SWITZERLAND	6.324	153	1.2	68.7	74.1
SY ARAB REP	6.451	35	3.3	52.8	52.8
THAILAND	35.735	69	2.7	53.6	58.7
TURKEY	36.11	46	2.5	53.7	53.7
UGANDA	10.127	43	2.7	47.5	47.5
U.K. KINGDOM	55.566	228	.4	67.8	73.8
TANZANIA	13.634	14	2.6	40	41
U.S.A.	207.0	22	1.1	71.1	71.1
U.S.S.R.	245.021	11	1.1	65	74
UPPER VOLTA	5.421	20	2.1	32.1	36.1
VIET NAM	40.404	183	2.5	50	50
YEMEN	5.9	30	2.7	42.3	42.3
YUGOSLAVIA	20.55	80	1	64.3	68.9
ZAMBIA	22.477	10	4.2	37.4	40
ZANBIA	4.275	6	2.9	43.6	43.5

FOR ALL COUNTRIES

AND VARIABLES 6-10

CONTINUED

COUNTRY	CAL. CONS	66 INCOME	71 INCOME	68 EV. IN	71 EV. IN
ALGERIA	1800	0	0	59.16	59.99
ARGENTINA	3100	18550	24500	30.56	37.63
AUSTRALIA	3160	27075	32993	42.82	75.78
AUSTRIA	2000	0	14666	10.00	9.77
BELGIUM	3500	15437	36474	15.02	11.18
BOLIVIA	1700	792	1000	2.64	2.46
BRAZIL	2800	20514	40000	17.66	26.29
BURUNDI	2070	0	0	16.03	14.8
CAMBODIA	2330	160	200	0	0
CANADA	3800	53979	81421	161.22	223.7
CHAD	2200	0	0	0	0
CHILE	2560	4829	5100	6.85	9.03
CHINA	2050	0	0	0	0
COLOMBIA	2110	6030	8700	0	0
CUBA	2600	0	0	.17	.26
CZECHOSLOV.	2050	0	0	72.99	81.79
DENMARK	2050	11390	15334	.25	0
DOM. REPUBLIC	2060	1074	1513	.01	.01
ECUADOR	1970	1270	1610	.36	.31
EGYPT	2770	5985	7000	11.52	19.81
EL SALVADOR	1850	844	1000	.05	.06
ETHIOPIA	1500	1367	1750	.03	.03
FINLAND	2900	7300	10195	1.31	1.31
FRANCE	3070	114487	132334	61.87	54.22
GERMANY	3150	0	194147	165.07	175.51
GUANA	2050	1640	2485	.32	.36
GREECE	2000	3	8377	2.1	3.92
GUATEMALA	2020	1229	1830	.02	.03
GUINEA	2060	282	315	0	0
HAITI	1530	402	500	0	0
HONG KONG	2370	6000	1510	0	0
HUNGARY	3190	0	0	21.75	23.24
INDIA	1990	0	46219	82.74	84.21
INDONESIA	1970	0	10823	43.41	62.33
IRAQ	2030	0	9764	186.20	317.20
IRAQ	2050	0	2547	96.42	110.07
ISRAEL	2990	0	4763	2.97	8.23
ITALY	3020	0	93503	23.29	26.96
IVORY COAST	2400	1193	1410	.03	.02
JAPAN	2470	0	192885	59.41	62.47

(listing for variables 6-10 continued)

KENYA	2200	1208	1598	.03	.04
KOREA	2270	0	8455	10.36	12.95
LAOS	2040	0	153	0	0
MALAYSIA	2190	0	2783	.1	.13
MALI	2130	0	0	0	0
MEXICO	2520	25643	36000	53.69	59.2
MOROCCO	2130	2953	3660	.72	.78
NETHERLANDS	3200	0	33555	28.22	64.15
NEPAL	2030	0	887	0	.01
NIGER	2170	369	0	0	0
NIGERIA	2290	4024	4750	9.48	99.11
NORWAY	2940	0	11191	7.8	8.57
PAKISTAN	2410	0	14738	5.08	7.81
PERU	2260	0	4933	6.01	5.27
PHILIPPINES	2040	0	8899	.25	.37
POLAND	3140	0	0	140.83	163.3
PORTUGAL	2920	0	7214	1.06	1.02
ROMANIA	3010	0	0	52.87	62.73
RWANDA	1900	163	266	.01	.01
S. ARABIA	2040	0	2517	186.18	295.35
SENEGAL	2300	782	718	0	0
S. AFRICA	2730	12340	16567	51.77	58.23
S. RHODESIA	2550	1085	1533	3.57	3.75
SPAIN	2770	0	34073	16.99	16.54
SRI LANKA	2340	0	2005	.06	.1
SUDAN	2070	0	1701	.01	.01
SUEDEN	2050	0	32698	6.12	6.51
SWITZERLAND	3190	0	17954	3.67	4.01
SY. ARAB. REP.	2050	0	1502	1.09	6.68
THAILAND	2210	0	6406	.28	.39
TURKEY	2760	0	12249	10.55	11.01
URUGUAY	2160	890	1040	.09	.1
UK. KINGDOM	3170	0	125735	173.71	176.01
TANZANIA	1700	1036	1277	.03	.05
U.S.A.	3300	752045	246778	1876.06	2302.12
U.S.S.R.	3180	0	0	1037.45	1250.26
UPPER VOLTA	2000	361	0	0	0
VIET NAM	2000	0	2341	0	0
YEMEN	2020	0	0	0	0
YUGOSLAVIA	3130	0	0	19.3	23.13
ZAMBIA	2040	1154	2150	.4	.56
ZANZIBAR	2240	1290	1421	.61	.82

FOR ALL COUNTRIES

AND VARIABLES 11 12 13 14 15

VARIABLES

COUNTRY 68 EV CON 71 EV CON 68 EN/CAP 71 EN/CAP COAL RES.

AFGHANISTAN	.64	.47	39	27	85
ALGERIA	4.81	7.26	357	492	20
ARGENTINA	33.3	41.75	1480	1773	450
AUSTRALIA	60.7	68.81	5045	5359	16000
AUSTRIA	21.14	24.09	28.76	3231	3
BELGIUM	52.13	61.57	5237	6116	1796
BOLIVIA	.95	1.13	204	224	0
BRAZIL	39.83	47.7	446	500	10475
BULGARIA	27.74	34.41	3315	4029	1147
BURUNDI	.03	.04	8	11	0
CANADA	167.97	201.33	8085	9326	11005
CHAD	.06	.1	18	27	0
CHILE	10.76	15.09	1151	1516	216
CHINA	0	0	0	0	1-011002+06
COLOMBIA	0	0	0	0	12500
CUBA	8.43	9.97	1044	1152	0
CZECHOSLOV.	82.76	95.92	5762	6615	11573
DENMARK	22.83	26.45	4692	5327	0
DEM. REPUB.	.34	1.1	209	264	0
ECUADOR	1.49	1.96	261	315	0
EGYPT	9.54	9.69	301	232	0
EL SALVADOR	.63	.81	194	223	0
ETHIOPIA	.55	.81	23	32	0
FINLAND	16.34	20.3	3484	4334	0
FRANCE	163.25	201.44	3282	3928	2400
GERMANY	270.02	320.06	4488	5223	70000
GHANA	1.06	1.65	126	192	0
GREECE	9.24	13.01	1027	1470	0
GUATEMALA	1.17	1.33	241	250	0
GUINEA	.37	.43	99	108	0
HAITI	.13	.14	28	29	0
HONG KONG	2.95	4.21	777	1040	0
HUNGARY	28.93	34.11	2337	3291	714
INDIA	94.49	102.52	185	186	106260
INDONESIA	11.78	15.39	103	123	845
IRAN	113.17	26.66	486	895	1000
IRAQ	5.19	6.34	620	650	0
ISRAEL	5.53	8.16	2016	2710	0
ITALY	119.61	145.04	2267	2682	0
IVORY COAST	.65	1.17	158	265	0
JAPAN	254.47	341.9	2519	3267	19243
KOREA	1.48	2.01	140	171	0

(listing for variables 11-15 continued)

KENYA	1.48	2.01	140	171	0
KOREA	17.75	27.94	582	860	0
LAOS	.08	.88	30	91	0
M. MALAYSIA	3.73	4.31	425	453	0
MALI	.1	.13	21	25	0
MEXICO	53.36	64.7	1129	1270	3466
MOROCCO	2.71	3.13	186	205	96
NETHERLANDS	52.44	65.89	4121	5069	2394
NEPAL	.12	.1	12	9	0
NIGER	.07	.09	18	22	0
NIGERIA	1.75	3.33	33	59	350
NORWAY	16.24	20.29	4254	5189	165
PAKISTAN	10.79	12.88	87	96	1661
PERU	8.24	8.7	645	621	2334
PHILIPPINES	9.45	11.32	272	298	0
POLAND	123.67	143.24	3828	4374	45741
PORTUGAL	5.12	7.14	541	805	26
ROMANIA	47.1	60.9	2368	2975	590
RWANDA	.03	.04	10	10	0
SA. ARABIA	4.57	7.67	625	988	0
SENEGAL	.55	.52	149	129	0
SO. AFRICA	59.04	71.71	2718	2535	7245
S. RHODESIA	2.77	3.4	560	618	6613
SPAIN	41.86	55.08	1266	1614	0
SRI LANKA	1.37	2.07	114	163	0
SUDAN	1.35	1.91	91	119	0
SWEDE	42.59	49.35	5379	6089	90
SWITZERLAND	18.56	22.63	3009	3575	0
SY. ARAB. REP.	2.47	3.13	421	485	0
THAILAND	6.87	10.47	204	296	0
TURKEY	15.12	18.65	451	516	1335
URUGUAY	.5	.73	62	72	0
U.S. KINGDOM	274.43	306.22	4961	5607	15500
TANZANIA	.65	.93	53	70	370
U.S.A.	2080.32	2327.64	10393	11244	1-110005+06
U.S.S.R.	945.21	1115.12	4050	4535	1-40634E+06
UPPER VOLTA	.05	.07	10	13	0
VIENTIANE	5.54	5.46	318	290	1000
YEMEN	.56	.94	411	639	0
YUGOSLAVIA	25.21	33.67	1259	1609	310
ZAMBIA	1.42	1.73	71	77	73
ZANAN	2.46	1.96	558	419	115

FOR ALL COUNTRIES

AND VARIABLES 16 17 18 19 20

VARIABLE

COUNTRY	COA. PRO.	LICG. RES	(LICG. PRO)	PETH. RES	PETH. PRO
AFGHANISTAN	135	0	0	0	0
ALGERIA	0	0	0	1235	50477.
ARGENTINA	675	0	0	344	22150
AUSTRALIA	40056.	95600.	23420	208	16119
AUSTRIA	0	143	3756	26	2473
BELGIUM	10300	0	0	0	0
BOLIVIA	0	0	0	23	2030
BRAZIL	2497	0	0	101	8177
BULGARIA	384	1117	24494	38	243
BURUNDI	0	0	0	0	0
CANADA	15810	24100	2978	1400	72997.
CHAD	0	0	0	0	0
CHILE	1332	5365	0	16	1613
CHINA	400000.	700	0	1709	29600
COLOMBIA	2600	0	0	226	10174
CUBA	0	0	0	0	117
CZECHOSLOV.	27225	9857	85566.	0	191
DENMARK	0	50	0	33	73
DOM. REPUB.	0	0	0	0	0
ECUADOR	0	0	0	824	4016
EGYPT	0	0	0	531	10630
EL SALVADOR	0	0	0	0	0
ETHIOPIA	0	0	0	0	0
FINLAND	0	0	0	0	0
FRANCE	29763	30	2962	13	1484
GERMANY	102707.	30000	248451.	71	7098
GHANA	0	0	0	0	0
GREECE	0	1575	11318	0	0
GUATEMALA	0	0	0	0	0
GUINEA	0	0	0	0	0
HAITI	0	0	0	0	0
HONG KONG	0	0	0	0	0
HUNGARY	3671	5679	22171	30	1977
INDIA	74771.	2063	3067	90	7486
INDONESIA	179	2000	0	1466	54080.
IRAN	1000	0	0	8515	248498.
IRAQ	0	0	0	4433	71123.
ISRAEL	0	0	0	0	6043
ITALY	151	524	839	35	1152
IVORY COAST	0	0	0	0	0
JAPAN	28098	1733	102	3	711

(listing for variables 16-20 continued)

KENYA	0	0	0	0	0
KOREA	0	0	0	0	0
LAOS	0	0	0	0	0
W. MALAYSIA	0	0	0	196	4432
MALI	0	0	0	0	0
MEXICO	2170	0	0	389	22163
MOROCCO	547	0	0	0	28
NETHERLANDS	2812	0	0	39	1597
NEPAL	0	0	0	0	0
NIGER	0	0	0	0	0
NIGERIA	341	73	0	1729	90914.
NORWAY	455	0	0	462	1626
PAKISTAN	1251	280	0	5	455
PERU	92	4630	0	68	3194
PHILIPPINES	39	88	0	0	0
POLAND	150697.	14862	38221.	7	347
PORTUGAL	252	26	8	0	0
ROMANIA	6612	1367	16547	198	14123
RWANDA	0	0	0	0	0
SA. ARABIA	0	0	0	8650	285583.
SENEGAL	0	0	0	0	0
SO. AFRICA	58440.	0	0	0	0
S. RHODESIA	2762	0	0	0	0
SPAIN	11160	780	3070	9	143
SRI LANKA	0	0	0	0	0
SUDAN	0	0	0	0	0
SWEDEN	0	0	0	0	0
SWITZERLAND	0	0	0	0	0
SY ARAB REP	0	0	0	182	5862
THAILAND	0	0	345	0	13
TURKEY	4641	1881	5336	20	3410
UGANDA	0	0	0	0	0
U.K. KINGDOM	119500.	0	0	716	83
TANZANIA	3	0	0	0	0
U.S.A.	535242.	406000.	6169	4899	464956.
U.S.S.R.	152467.	5716	400440.	0	0
UPPER VOLTA	0	0	0	0	0
VIET NAM	0	0	0	0	0
YEMEN	0	0	0	0	0
YUGOSLAVIA	599	26600	30341	48	3200
ZAMBIA	123	0	0	0	0
ZAMBIA	959	0	0	0	0

FOR ALL COUNTRIES

AND VARIABLES 21 22 23 24

VARIABLES

COUNTRY N GAS BYE N GAS LND TL EV PW N GAS PD

AFGHANISTAN	0	2894	326	0
ALGERIA	394	2894	1201	52
ARGENTINA	204	6188	23623	0
AUSTRIA	1069	2628	57099	3466
AUSTRIA	16	1563	26748	1673
BELGIUM	0	52	31597	2979
BOLIVIA	139	40	830	0
BRAZIL	26	1242	50988	419
BULGARIA	28	227	21016	0
BURUNDI	0	0	21.5	0
CANADA	1499	82503	216472	2289
CHAD	0	0	43	0
CHILE	71	4080	2524	0
CHINA	99	0	0	0
COLOMBIA	73	1563	8750	146
CUBA	0	0	4072	77
CZECHOSLOV.	11	1167	47237	7435
DENMARK	14	0	17540	398
DOM. REPUB.	0	0	1052	0
ECUADOR	122	14	1050	0
EGYPT	108	85	7591	0
EL SALVADOR	0	0	743	0
ETHIOPIA	0	0	585	0
FINLAND	0	0	20842	51
FRANCE	187	7517	148998	6492
GERMANY	351	16924	253792	18833
GHANA	0	0	2944	0
GREECE	0	0	8427	8
GUATEMALA	0	0	780	0
GUINEA	0	0	450	0
HAITI	0	0	115	0
HONG KONG	0	0	5574	61
HUNGARY	119	4110	14990	973
INDIA	44	693	60352	0
INDONESIA	156	4126	2084	33
IRAN	5656	17185	8309	0
IRAQ	566	870	1929	0
ISRAEL	1	124	7639	0
ITALY	170	14142	124860	2894
IVORY COAST	0	0	588	0
JAPAN	8	2428	385612	5042

(listing for variables 21-24 continued)

KENYA	0	0	555	0
KOREA	0	0	10952	0
LAOS	0	0	16.1	0
W. MALAYSIA	0	0	3574	0
MALI	0	0	44.8	0
MEXICO	305	18694	31322	0
MOROCCO	0	58	2085	0
NETHERLANDS	2209	58385	44904	747
NEPAL	0	0	60	0
NIGER	0	0	38.3	0
NIGERIA	1161	159	1880	0
NORWAY	439	0	62930	182
PAKISTAN	547	3795	7068	0
PERU	74	480	5324	0
PHILIPPINES	0	0	8666	22
POLAND	0	0	69887	6782
PORTUGAL	0	0	7815	125
ROMANIA	0	0	39454	522
RWANDA	0	0	34	0
SA. ARABIA	0	0	805	0
SENEGAL	0	0	303	0
SO. AFRICA	0	0	52717	1800
S. RHODESIA	0	0	6800	0
SPAIN	0	0	61917	2387
SRI LANKA	0	0	900	6
SUDAN	0	0	259	0
SWEDEN	0	0	66549	511
SWITZERLAND	0	0	32785	383
SY ARAB REP.	0	0	1049	0
THAILAND	0	0	4545	0
TURKEY	0	0	9781	726
UGANDA	0	0	617	0
UN. KINGDOM	0	0	256098	11649
TANZANIA	0	0	422	0
U.S.A.	0	0	1.71752E+06	26400
U.S.S.P.	0	0	800360	33229
UPPER VOLTA	0	0	33	0
VIET NAM	0	0	1215	0
YEMEN	0	0	6.2	0
YUGOSLAVIA	0	0	29509	169
ZAMBIA	0	0	378	0
ZIMBIA	0	0	1168	0

How to Load the Program and Files

1. Load the three program tapes: EARTH, LDTAB, and LDLIST, and after each tape is loaded, NAME it and SAVE it--like this:

<u>Load Tape for</u>	<u>NAME & SAVE by typing</u>
EARTH	NAME-EARTH SAVE
LDTAB	NAME-LDTAB SAVE
LDLIST	NAME-LDLIST SAVE

2. Open and load the files by typing:

OPEN-LIST,14

OPEN-TABLE,83

GET-LDLIST

RUN

(Computer will print DONE)

GET-LDTAB

RUN

(Computer will print DONE)

3. Run the EARTH program by typing:

GET-EARTH

RUN

Hints on Using the Program

1. The program assumes you are using a Teletypewriter with all upper case letters. If you have lower case available, do not use it--all student input must be in upper case (capital) letters.
2. Only the first letter need be typed for any requested input. For example,

WANT INSTRUCTIONS (YES OR NO)?Y

Expanding the Data Base

Although the data base is complete and adequate for use with the EARTH unit, individual students or teachers may wish to add countries or variables to the data base, particularly if more recent data becomes available. Directions for doing so are given below.

1. To ADD COUNTRIES (up to a maximum total of 120 countries)

- a. In the EARTH program, type in the total number of countries you wish in each place marked by an underline below. The total 83 is currently in each of these positions in the program

90 C = _____

110 DIM C(____), V(24), R(____), O(____), P(____)

- b. In the LDLIST program, type in the total number of countries you wish in the place marked by an underline below. Again, the total 83 is currently in this position in the program.

80 C = _____

Retype the necessary DATA statements in LDLIST, adding the names of the additional countries in their correct alphabetical order. Insert DATA statements if necessary.

- c. In the LDTAB program, make the following changes:

90 FOR Z = 1 to the total (number of countries)

Insert DATA statements for each additional country, in correct alphabetical order. The DATA statements should include the name of the country followed by the 24 data items, in order.

- d. Open the TABLE and LIST files. LIST should still be opened to 14 records, and TABLE should be opened to a number of records equal to the number of countries you now have. For example, if you added five more countries, you would open the TABLE and LIST files as follows:

OPEN-TABLE,88

OPEN-LIST,14

- e. Load the files by RUNNING the LDLIST and LDTAB programs.

2. To ADD VARIABLES (Up to a maximum total of 48 variables)

- a. In the EARTH program, make the following changes:

100 V = the total number of variables (there are now 24)

110 DIM C(83), V(), R(83), O(83), P(83)
the total number of variables

- b. In the LDLIST program, make the following changes:

90 V = the total number of variables

Add DATA statements after line 500 (Use the RENUMBER command periodically if you are adding several DATA statements between 500 and 510). For each variable added, the DATA should be of the format: 9-character abbreviation and 3 spaces, "a 43-character variable name."

- c. In LDTAB, make the following changes:

70 DIM A\$(14), V()
the total number of variables

130 FOR X = 110

Insert a third DATA statement (e.g., at 195, 215, 235, 255, etc.) for each of the 83 (or more) countries. This third DATA statement should contain the values for each variable you added.

If you are adding variables, but not countries, the files can be opened to the same sizes as for the original data base:

OPEN-LIST, 14

OPEN-TABLE, 83

3. To MAKE A CORRECTION IN AN INDIVIDUAL DATA ITEM

Find the specific DATA statement in LDTAB and retype that statement, correcting the data item when you come to it. Then, RUN LDTAB again to load the TABLE file with the corrected data base.

STUDENT GUIDE EXERCISES

Suggestions

Remind students of the following:

1. Where data on a particular variable was unobtainable or unavailable for a particular country, a zero was entered in the data base.
2. Do not enter zeros in the CAPITA or INCRS programs, except to stop. Instead, omit those countries for which a zero appears in the table.
3. In using the TABLE option, numbers of countries and variables must be entered in consecutive order.

Answers

1. Here are sample runs showing the expected student printout.

a.

WHICH OPTION?R

WHICH VARIABLE?12

ALL COUNTRIES (YES OR NO)?N

HOW MANY?12

TOP OR BOTTOM?T

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1971 ENERGY CONSUMED (M.M.T.C.E.)

U.S.A.	2327.64
U.S.S.R.	1112.19
JAPAN	341.9
GERMANY	320.06
UN. KINGDOM	306.68
FRANCE	201.48
CANADA	201.38
ITALY	145.04
POLAND	143.24
INDIA	102.52
CZECHOSLOV.	95.92
SO. AFRICA	71.71

WHICH OPTION?R

WHICH VARIABLE?12

ALL COUNTRIES (YES OR NO)?N

HOW MANY?12

TOP OR BOTTOM?B

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1971 ENERGY CONSUMED (M.M.T.C.E.)

SENEGAL	.52
AFGHANISTAN	.47
GUINEA	.43
LAOS	.28
HAITI	.14
MALI	.13
CHAD	.1
NEPAL	.1
NIGER	.09
UPPER VOLTA	.07
BURUNDI	.04
RWANDA	.04

b.

WHICH OPTION?

HOW MANY COUNTRIES? 24

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF COUNTRIES.
OR, TYPE '0' TO SEE THE LIST.

?1
?10
?11
?12
?17
?25
?26
?30
?31
?34
?39
?41
?44
?46
?50
?51
?57
?60
?62
?63
?74
?76
?77
?78

HOW MANY VARIABLES (5 OR LESS, PLEASE)? 2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

?1
?8

FOR COUNTRIES 1 10 11 12 17 25 26 30 31 34
39 41 44 46 50 51 57 60 62 63 74 76
77 78
AND VARIABLES 1 8

VARIABLE

COUNTRY 71 POP. 71 INCOME

d)
1971 INCOME PER CAPITA

AFGHANISTAN	17.48	0
BURUNDI	3.615	300
CANADA	21.595	81421.
CHAD	3.8	0
CZECHOSLOV.	14.5	0
FRANCE	51.25	132344.
GERMANY	75.129	194147.
GUINEA	4.01	315
HAITI	4.969	500
INDIA	550.374	46219.
ITALY	54.078	93508.
JAPAN	104.661	198885.
LAOS	3.033	153
MALI	5.143	0
NEPAL	11.29	887
NIGER	4.126	0
POLAND	32.749	0
RWANDA	4.827	366
SENEGAL	4.023	718
SO. AFRICA	22.092	16567
UN. KINGDOM	55.566	125735.
U.S.A.	207.05	248778.
U.S.S.R.	245.091	0
UPPER VOLTA	5.491	0

55.33
3770.56
2582.32
2584.18
78.55
100.62
83.98
1729.13
1900.28
50.45
78.57
69.51
178.52
749.71
2262.80
4572.70

- c. (Note: Countries with zeros in the table are omitted. Zeros mean "Data Unobtainable")

DONE
GET-CAPITA
RUN
CAPITA

1971 INCOME PER CAPITA
ENTER POPULATION IN MILLIONS, THEN NAT'L. INCOME
IN MILLIONS OF DOLLARS (0.0 TO STOP)

73.615,200
\$ 55.325
721.595,81421.
\$ 3770.36
751.25,132344
\$ 2582.32
775.129,194147
\$ 2584.18
74.01,315
\$ 78.5536
74.969,500
\$ 100.624
750.374,46219
\$ 83.9774
754.078,93508
\$ 1729.13
7104.661,198885
\$ 1900.28
73.033,153
\$ 50.4451
711.29,887
\$ 78.5651
73.827,266
\$ 69.5061
74.022,718
\$ 178.518
722.092,16567
\$ 749.91
755.566,125735
\$ 2262.8
7207.05,946778
\$ 4572.7
20.0

BURUNDI
CANADA
FRANCE
GERMANY
GUINEA
HAITI
INDIA
ITALY
JAPAN
LAOS
NEPAL
RWANDA
SENEGAL
SOUTH AFRICA
UNITED KINGDOM
U. S. A.

DONE

2.

WHICH OPTION??

HOW MANY COUNTRIES? 24

AFTER EACH '7' TYPE A NUMBER FROM THE LIST OF COUNTRIES.
OR, TYPE '0' TO SEE THE LIST.

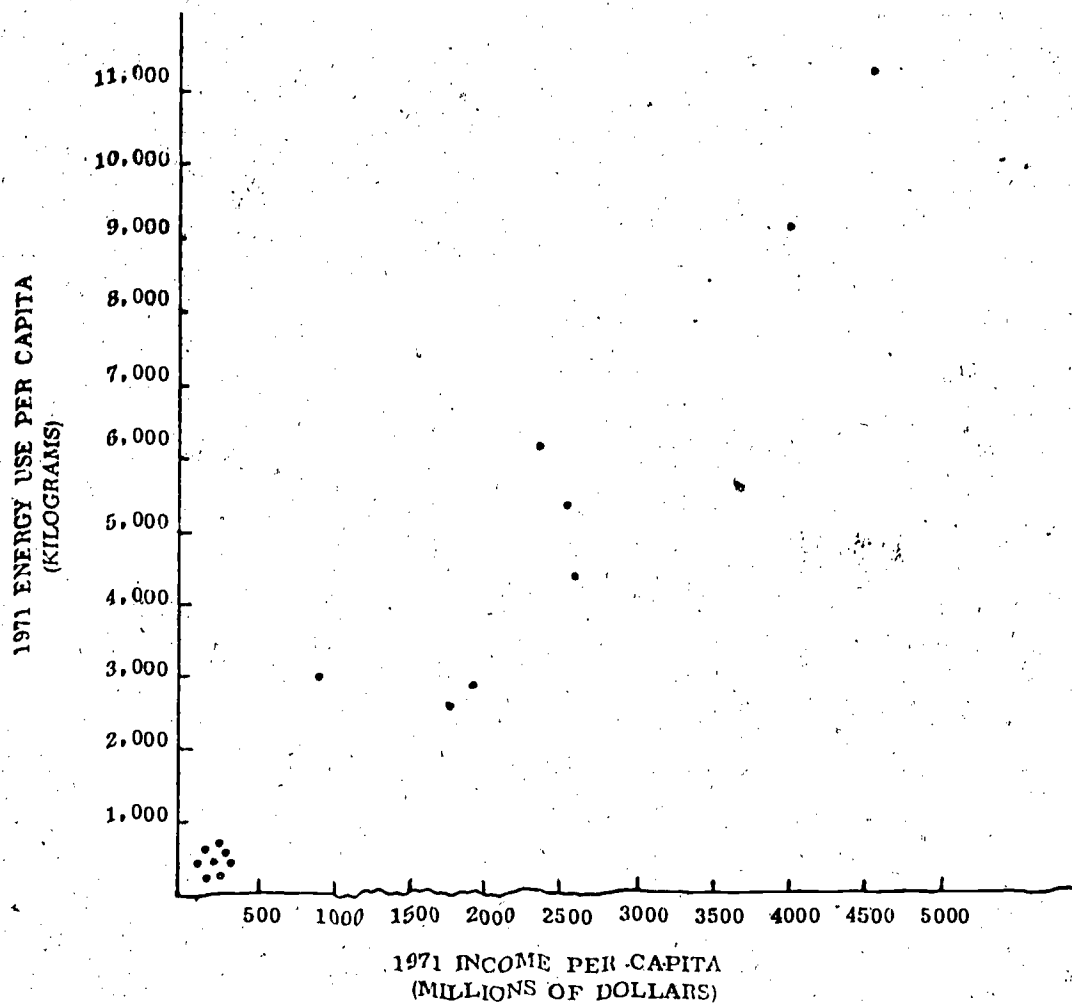
71
710
711
712
717
725
726
730
731
734
739
741
744
746
750
751
757
760
762
763
774
776
777
778

HOW MANY VARIABLES (5 OR LESS, PLEASE)? 1

AFTER EACH '7' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

714
FOR COUNTRIES 1 10 11 12 17 25 26 30 31 34
39 41 44 46 50 51 57 60 62 63 74 76
77 78
AND VARIABLES 14

COUNTRY	VARIABLE 71 EN/CAP
AFGHANISTAN	27
BURUNDI	11
CANADA	9326
CHAD	27
CZECHOSLOV.	6615
FRANCE	3928
GERMANY	5823
GUINEA	100
HAITI	29
INDIA	186
ITALY	2682
JAPAN	3267
LAOS	91
MALI	25
NEPAL	9
NIGER	22
POLAND	4374
RWANDA	10
SENEGAL	129
SO. AFRICA	2895
UN. KINGDOM	5507
U.S.A.	11244
U.S.S.R.	4535
UPPER VOLTA	13



WHICH OPTION?

HOW MANY COUNTRIES? 12

AFTER EACH '1' TYPE A NUMBER FROM THE LIST OF COUNTRIES.
OR, TYPE '0' TO SEE THE LIST.

711
717
725
726
734
739
741
757
763
774
776
777

HOW MANY VARIABLES (5 OR LESS, PLEASE)? 2

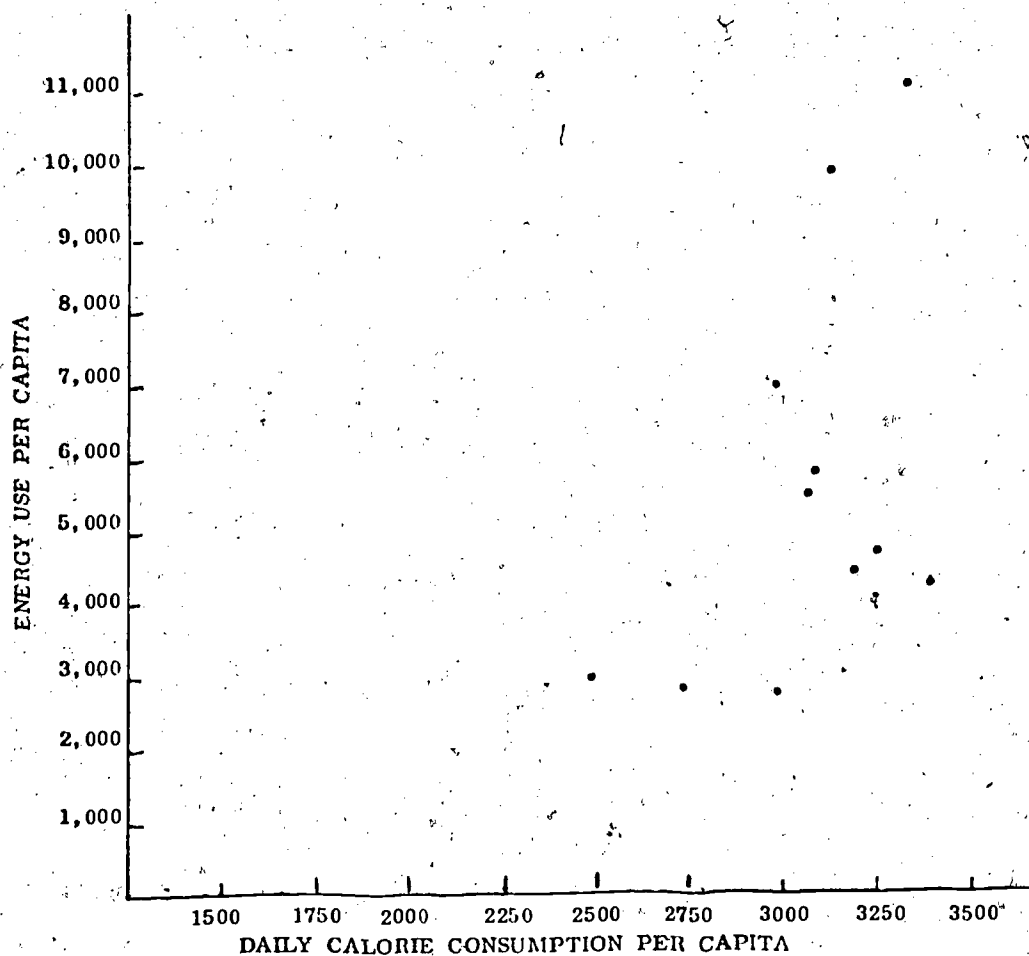
AFTER EACH '1' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

76
714

3.

FOR COUNTRIES 11 17 25 26 34 39 41 57 63 74
 76 77
 AND VARIABLES 6 14

COUNTRY	VARIABLE	
	CAL. CONS	71 EV/CAP
CANADA	3200	9326
CZECHOSLOV.	3030	6615
FRANCE	3270	3928
GERMANY	3180	5823
INDIA	1990	156
ITALY	3020	2682
JAPAN	2470	3267
POLAND	3140	4374
SO. AFRICA	2730	2895
UN. KINGDOM	3170	5507
U.S.A.	3300	11244
U.S.S.R.	3180	4535



4. a. Values entered in a third column will vary, depending on the countries selected.

WHICH OPTION?T

HOW MANY COUNTRIES?83

HOW MANY VARIABLES (5 OR LESS, PLEASE)?2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

711

712

FOR ALL COUNTRIES

AND VARIABLES 11 12

COUNTRY	VARIABLE		<i>Increase Rates</i>
	68 EN COV	71 EN CON	
AFGHANISTAN	.64	.47	
ALGERIA	4.81	7.28	
ARGENTINA	33.3	41.75	
AUSTRALIA	60.7	68.21	
AUSTRIA	21.14	24.09	
BELGIUM	52.13	61.57	
BOLIVIA	.96	1.13	
BRAZIL	39.89	47.7	
BULGARIA	27.74	34.41	
BURUNDI	.03	.04	
CANADA	167.97	201.38	19.89 %
CHAD	.06	.1	
CHILE	10.76	15.09	
CHINA	0	0	
COLOMBIA	0	0	
CUBA	8.43	9.97	
CZECHOSLOV.	82.76	95.92	
DENMARK	22.83	26.45	
DOM. REPUB.	.84	1.1	
ECUADOR	1.49	1.98	
EGYPT	9.54	9.69	
EL SALVADOR	.63	.81	
ETHIOPIA	.55	.81	
FINLAND	16.34	20.3	
FRANCE	163.95	201.48	22.89 %
GERMANY	270.02	320.06	18.53 %
GHANA	1.06	1.65	
GREECE	9.04	13.01	
GUATEMALA	1.17	1.33	
GUINEA	.37	.43	
HAITI	.13	.14	
HONG KONG	2.95	4.21	
HUNGARY	28.93	34.11	
INDIA	94.49	102.52	
INDONESIA	11.78	15.39	
IRAN	13.17	26.66	
IRAQ	5.49	6.34	
ISRAEL	5.53	8.16	
ITALY	119.61	145.04	21.26 %
IVORY COAST	.65	1.17	
JAPAN	254.47	341.9	34.36 %
KENYA	1.48	2.01	
KOREA	17.75	27.94	
LAOS	.08	.28	
M. MALAYSIA	3.73	4.31	
MALI	.1	.13	
MEXICO	53.36	64.7	
MOROCCO	2.71	3.13	
NETHERLANDS	52.44	66.89	27.55 %
NEPAL	.12	.1	
NIGER	.07	.09	

continued on next page...

21

4. a. (continued)

NIGERIA	1.75	3.33
NORWAY	16.24	20.29
PAKISTAN	10.79	12.88
PERU	8.24	8.7
PHILLIPINES	9.45	11.32
POLAND	123.67	143.24
PORTUGAL	5.12	7.14
ROMANIA	47.1	60.9
RWANDA	.03	.04
SA. ARABIA	4.57	7.87
SENEGAL	.55	.58
SO. AFRICA	59.04	71.71
S. RHODESIA	2.77	3.4
SPAIN	41.86	55.08
SRI LANKA	1.37	2.07
SUDAN	1.35	1.91
SWEDEN	42.59	49.35
SWITZERLAND	18.56	22.63
SY ARAB REP	2.47	3.13
THAILAND	6.87	10.47
TURKEY	15.12	18.65
UGANDA	.5	.73
UN. KINGDOM	274.83	304.68
TANZANIA	.65	.93
U. S. A.	2080.32	2327.64
U. S. S. R.	965.21	1112.19
UPPER VOLTA	.05	.07
VIET NAM	5.54	5.46
YEMEN	.56	.94
YUGOSLAVIA	25.21	33.07
ZAIRE	1.42	1.73
ZAMBIA	2.26	1.96

15.82 %

11.59 %

11.89 %

15.23 %

- b. Again, values entered in a third column will vary, depending on the countries selected.

WHICH OPTION? T

HOW MANY COUNTRIES? 83

HOW MANY VARIABLES (5 OR LESS, PLEASE)? 2

AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLES.
OR, TYPE '0' TO SEE THE LIST.

?9

?10

FOR ALL COUNTRIES

AND VARIABLES 9 10

VARIABLE

COUNTRY 68 EV PRO 71 EV PRO

Increase Rates

AFGHANISTAN	2.4	3.54
ALGERIA	59.14	52.99
ARGENTINA	30.54	37.63
AUSTRALIA	48.82	75.78
AUTRIA	10.08	9.77
BELGIUM	15.02	11.18
BOLIVIA	2.64	2.46
BRAZIL	17.66	20.39
BULGARIA	16.03	14.8
BURUNDI	0	0
CANADA	161.22	223.7

98.75 %

22

4. b. (continued)

CHAD	0	0
CHILE	6.85	9.08
CHINA	0	0
COLOMBIA	0	0
CUBA	.17	.26
CZECHOSLOV.	72.99	81.79
DENMARK	.25	0
DOM. REPUB.	.01	.01
ECUADOR	.36	.31
EGYPT	11.52	19.81
EL SALVADOR	.05	.06
ETHIOPIA	.03	.03
FINLAND	1.31	1.31
FRANCE	61.87	54.22
GERMANY	165.07	175.51
GHANA	.38	.36
GREECE	8.1	3.92
GUATEMALA	.02	.03
GUINEA	0	0
HAITI	0	0
HONG KONG	0	0
HUNGARY	21.75	23.24
INDIA	82.74	84.91
INDONESIA	43.41	62.33
IRAN	186.62	317.29
IRAQ	96.89	110.07
ISRAEL	2.97	8.23
ITALY	23.29	26.26
IVORY COAST	.03	.02
JAPAN	59.81	49.47
KENYA	.03	.04
KOREA	10.36	12.95
LAOS	0	0
M. MALAYSIA	.1	.13
MALI	0	0
MEXICO	53.69	59.2
MOROCCO	.72	.76
NETHERLANDS	28.22	64.15
NEPAL	0	.01
NIGER	0	0
NIGERIA	9.48	99.81
NORWAY	7.8	8.67
PAKISTAN	5.08	7.31
PERU	6.01	5.27
PHILLIPINES	.25	.37
POLAND	140.88	163.8
PORTUGAL	1.06	1.02
ROMANIA	52.87	62.78
RWANDA	.01	.01
SA. ARABIA	186.18	295.35
SENEGAL	0	0
SO. AFRICA	51.77	58.83
S. RHODESIA	3.57	3.75
SPAIN	16.99	16.54
SRI LANKA	.06	.1
SUDAN	.01	.01
SWEDEN	6.12	6.51
SWITZERLAND	3.67	4.01
SY ARAB REP	1.09	6.88
THAILAND	.28	.39
TURKEY	10.55	11.01
UGANDA	.09	.1
UN. KINGDOM	173.71	176.01
TANZANIA	.03	.05
U.S.A.	1876.06	2029.19
U.S.S.R.	1087.45	1250.26
UPPER VOLTA	0	0
VIET NAM	0	0
YEMEN	0	0
YUGOSLAVIA	19.3	23.13
ZAIRE	.4	.56
ZAMBIA	.61	.89

-12.36 %
6.32 %

12.75 %

-17.29 %

127.32 %

16.27 %

1.32 %

8.16 %
14.97 %

5. (Note: Those countries for which data was unobtainable have been omitted from these tables.)

WHICH OPTION?R

WHICH VARIABLE?IS

ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

COAL RESERVES (M.M.T.)

U.S.S.R.	1.40638E+06
U.S.A.	1.11000E+06
CHINA	1.01100E+06
INDIA	106260.
SO. AFRICA	72465.
GERMANY	70000.
CANADA	61000.
POLAND	45741.
JAPAN	19248
AUSTRALIA	16000
UN. KINGDOM	15500
COLOMBIA	12500
CZECHOSLOV.	11573
BRAZIL	10675
S. RHODESIA	6613
MEXICO	3466
FRANCE	2800
NETHERLANDS	2394
PERU	2334
BELGIUM	1796
PAKISTAN	1661
TURKEY	1335
BULGARIA	1147
IRAN	1000
VIET NAM	1000
INDONESIA	845
HUNGARY	714
ROMANIA	590
ARGENTINA	450
TANZANIA	370
NIGERIA	350
YUGOSLAVIA	319
CHILE	218
NORWAY	166
ZAMBIA	115
MOROCCO	96
SWEDEN	90
AFGHANISTAN	85
ZAIRE	73
PORTUGAL	26
ALGERIA	20
AUSTRIA	3

WHICH OPTION?R

WHICH VARIABLE?17

ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

LIGNITE & BROWN-COAL RESERVES (M.M.T.)

U. S. A.	406000.
AUSTRALIA	95600.
GERMANY	30000
YUGOSLAVIA	26600
CANADA	24100
POLAND	14862
CZECHOSLOV.	9857
U. S. S. R.	5716
HUNGARY	5679
CHILE	5365
PERU	4630
INDIA	2063
INDONESIA	2000
TURKEY	1881
JAPAN	1733
GREECE	1575
ROMANIA	1367
BULGARIA	1117
SPAIN	780
CHINA	700
ITALY	524
PAKISTAN	280
AUSTRIA	143
PHILLIPINES	88
NIGERIA	73
DENMARK	50
FRANCE	30
PORTUGAL	26
KOREA	5

WHICH OPTION?5

WHICH VARIABLE?19
ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1972 PETROLEUM RESERVES (M.M.T.)

SA. ARABIA	18658
IRAN	8515
U.S.A.	4899
IRAQ	4433
NIGERIA	1729
CHINA	1709
INDONESIA	1466
ALGERIA	1235
CANADA	1080
ECUADOR	834
UN. KINGDOM	716
EGYPT	531
NORWAY	462
MEXICO	389
ARGENTINA	344
COLOMBIA	226
AUSTRALIA	208
ROMANIA	198
W. MALAYSIA	196
SY ARAB REP	182
BRAZIL	104
INDIA	90
GERMANY	71
PERU	68
YUGOSLAVIA	48
NETHERLANDS	39
BULGARIA	38
ITALY	35
DENMARK	33
HUNGARY	30
BOLIVIA	28
AUSTRIA	26
TURKEY	20
CHILE	16
FRANCE	13
SPAIN	9
POLAND	7
PAKISTAN	5
JAPAN	3

WHICH OPTION?S

WHICH VARIABLE?21
ALL COUNTRIES (YES OR NO)?Y

THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.

1972 NATURAL GAS RESERVES (1000 M.C.M.)

IRAN	5656
ALGERIA	3964
NETHERLANDS	2209
CANADA	1499
NIGERIA	1161
AUSTRALIA	1069
IRAQ	566
PAKISTAN	547
NORWAY	439
GERMANY	351
MEXICO	305
ARGENTINA	206
FRANCE	187
ITALY	170
INDONESIA	156
BOLIVIA	139
ECUADOR	122
HUNGARY	119
EGYPT	108
CHINA	99
PERU	74
COLOMBIA	73
CHILE	71
INDIA	44
BULGARIA	28
BRAZIL	26
AUSTRIA	16
DENMARK	14
CZECHOSLOV.	11
JAPAN	8
ISRAEL	1

WHICH OPTION?STOP

DONE
BYE
024 MINUTES OF TERMINAL TIME
J

SOURCES OF INFORMATION ON THE ENERGY CRISIS

Books

Energy and Power. W. H. Freeman. San Francisco: Scientific American Books, 1971. (Eleven easy-to-read articles about energy today.)

Energy in the United States: Resources, Uses and Policy Issues. H. H. Landberg and S. H. Schurr. New York: Random House, 1967.

Energy--The New Era. S. David Freeman. New York: Walker and Company, 1974. (A look at how the energy crisis developed, and how it might be improved.)

Energy for Survival. Willson Clark. Garden City, New York: Anchor Books, 1974. (An analysis of alternate energy sources whose development might provide a partial solution to our energy problems.)

Energy Crisis--Volume 1, 1969-73. Lester A. Sobel, Ed. New York: Facts on File, Inc., 1974. (This book traces the development and events of the energy crisis through a series of news articles written as weekly coverage of news events.)

A Time to Choose--America's Energy Future. Final Report of the Energy Policy Project of the Ford Foundation. Cambridge, Massachusetts: Ballinger Publishing, 1974. (An examination of the future shape of the energy shortage, this report is very well documented with up to date data.)

Newspapers

Everyday newspapers carry new stories about the energy crisis, including local and national problems and plans.

Periodicals and Reference Works--Subject Headings

A wealth of information on the energy crisis is contained in periodicals and standard reference works like encyclopedias. Subject headings which you can use to locate information through card catalogs, Encyclopedia Yearbook Indexes, and other standard indexes are:

- Atomic energy
- Atomic power
- Atomic research
- Automobiles

Coal mines and mining
Coal research
Conservation of energy
Conservation of natural resources

Diesel engines

Economics
Electric power
Electric utilities
Electricity
Energy crisis
Energy crisis--U.S. Foreign Policy
Energy crisis--sources

Fuel
Fuel research
Fuel supply

Gas, natural
Gas, industry
Gas manufacture and works
Gasoline
Geothermal energy

Hydroelectric plants
Hydrogen, liquid

Industry and state
Industry and the environmental movement
Insulation
International Atomic Energy Agency

Nuclear fuels
Nuclear fusion
Nuclear reactors

Petroleum
Petroleum industry
Petroleum refineries
Petroleum supply
Power resources

Solar energy
Solar furnaces (heating)
Strip mining

United States Energy Agency
United States Federal Power Commission

Wind power

Program Listing of EARTH

GET-EARTH
LIST
EARTH

```
10  FILES TABLE,LIST
20  REM: THIS PROGRAM WRITTEN BY JUDY EDWARDS,NWREL, JUNE,1975
30  REM: 'EARTH' IS DESIGNED FOR USE WITH THE 'EARTH' ENERGY UNIT
40  REM: ITS PURPOSE IS TO ALLOW STUDENTS TO QUERY A DATA BASE OF ENERGY
50  REM: INFORMATION ABOUT COUNTRIES.  SEE MANUALS FOR MORE INFO.
60  DIM AS(72),BS(72),CS(72),DS(72),ES(72),FS(72),GS(72),HS(72)
70  DIM IS(72),JS(72),KS(72),LS(72),MS(72),NS(72),OS(72),PS(72)
80  LET A=A1=A1=X=Y=J=I=Z=T=P=0
90  C=83
100 V=24
110 DIM C(83),V(83),R(83),O(83),P(83)
120 FILES TABLE,LIST
130 PRINT "WANT INSTRUCTIONS (YES OR NO)";
140 INPUT AS
150 IF AS(1,1)="N" THEN 200
160 REM* READ INSTRUCTIONS FROM 'LIST' FILE AND PRINT INSTRUCTIONS
170 READ #2,10
180 READ #2;AS,BS,CS,DS,ES,FS,GS,HS,IS,JS,KS,LS,MS,NS,OS,PS
190 PRINT AS,BS,CS,DS,ES,FS,GS,HS,IS,JS,KS,LS,MS,NS,OS,PS
200 PRINT LIN(3),"WHICH OPTION";
210 INPUT AS
220 IF AS(1,1)="H" THEN 170
230 IF AS(1,1)="T" THEN 330
240 IF AS(1,1)="R" THEN 1570
250 IF AS(1,1)="L" THEN 300
260 IF AS(1,1)="S" THEN 2270
270 PRINT "CHOOSE ONE OF THESE OPTIONS:"
280 PRINT "  TABLE",LIN(1),"  LIST",LIN(1),"  HELP",LIN(1),"  STOP"
290 GOTO 200
300 GOSUB 1250
310 GOTO 200
320 REM* THIS IS THE 'TABLE' OPTION
330 PRINT LIN(1),"HOW MANY COUNTRIES";
340 INPUT A1
350 IF A1>C THEN 510
360 IF A1<0 THEN 560
370 PRINT LIN(1),"AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF COUNTRIES
380 PRINT "OR, TYPE '0' TO SEE THE LIST.",LIN(1)
390 FOR X=1 TO A1
400 INPUT C(X)
410 IF C(X)=0 THEN 530
420 IF C(X)>C THEN 490
430 IF X=1 THEN 450
440 IF C(X)<C(X-1) THEN 470
450 NEXT X
460 GOTO 590
470 GOSUB 1430
480 GOTO 370
490 PRINT LIN(1),"PLEASE ENTER A NUMBER LESS THAN",C+1
500 GOTO 400
```

```

510 PRINT LIN(1),"PLEASE ENTER A NUMBER LESS THAN";C+1
520 GOTO 330
530 GOSUB 1330
540 GOTO 330
550 REM* IF 'ALL COUNTRIES'
560 FOR X=1 TO C
570 C(X)=X
580 NEXT X
590 PRINT LIN(1),"HOW MANY VARIABLES (5 OR LESS, PLEASE)";
600 INPUT A2
610 IF A2>5 THEN 1190
620 PRINT LIN(1),"AFTER EACH '?' TYPE A NUMBER FROM THE LIST OF VARIABLE
630 PRINT "OR, TYPE '0' TO SEE THE LIST.";LIN(1)
640 FOR Y=1 TO A2
650 INPUT V(Y)
660 IF V(Y)=0 THEN 760
670 IF V(Y)>V THEN 720
680 IF Y=1 THEN 700
690 IF V(Y)<V(Y-1) THEN 740
700 NEXT Y
710 GOTO 790
720 PRINT LIN(1),"PLEASE ENTER A NUMBER LESS THAN";V+1
730 GOTO 650
740 GOSUB 1430
750 GOTO 620
760 GOSUB 1470
770 GOTO 590
780 REM* PRINT HEADINGS FOR THE TABLE
790 IF A1=C THEN 1410
800 PRINT "FOR COUNTRIES";
810 FOR X=1 TO A1
820 PRINT C(X);
830 NEXT X
840 PRINT LIN(1),"AND VARIABLES";
850 FOR Y=1 TO A2
860 PRINT V(Y);
870 NEXT Y
880 PRINT LIN(3),TAB(12),"VARIABLE";LIN(2),"COUNTRY";
890 READ #2,I
900 FOR X=1 TO (2*(V(1)-1))
910 READ #2,B$
920 NEXT X
930 READ #2,A$
940 PRINT TAB(12);A$;
950 FOR Y=2 TO A2
960 FOR X=1 TO ((2*(V(Y)-V(Y-1)))-1)
970 READ #2,B$
980 NEXT X
990 READ #2,A$
1000 PRINT TAB(Y*12);A$;

```

```

1010 NEXT Y
1020 PRINT LIN(2)
1030 REM* READ TABLE VALUES FROM 'TABLE' FILE AND PRINT TABLE
1040 FOR X=1 TO A1
1050 READ #1,C(X),C3
1060 PRINT C3
1070 LET J=1
1080 FOR Y=1 TO A2
1090 READ #1,Z
1100 IF J=V(Y) THEN 1130
1110 LET J=J+1
1120 GOTO 1090
1130 PRINT TAB(Y*12),Z
1140 LET J=J+1
1150 NEXT Y
1160 PRINT
1170 NEXT X
1180 GOTO 200
1190 PRINT LIN(1),"FOR MORE THAN 5, RUN A SECOND TABLE. FOR NOW, ASK FB
1200 PRINT "ONLY THE FIRST 5 VARIABLES."
1210 LET A2=5
1220 GOTO 620
1230 PRINT "FOR ALL COUNTRIES"
1240 GOTO 840
1250 REM* THIS IS THE 'LIST' OPTION.
1260 PRINT "LIST COUNTRIES OR VARIABLES"
1270 INPUT A3
1280 IF A3(1,1)="C" THEN 1330
1290 IF A3(1,1)="V" THEN 1470
1300 PRINT "TYPE 'COUNTRIES' OR 'VARIABLES'"
1310 GOTO 1270
1320 REM* LIST COUNTRIES
1330 READ #2,7
1340 PRINT
1350 FOR I=1 TO C
1360 PRINT I
1370 READ #2,A5
1380 PRINT A5
1390 NEXT I
1400 RETURN
1410 PRINT LIN(1),"FOR ALL COUNTRIES"
1420 GOTO 840
1430 PRINT LIN(1),"PLEASE START AGAIN AND ENTER YOUR NUMBERS IN ORDER.
1440 PRINT "WITH THE SMALLEST NUMBER."
1450 RETURN
1460 REM* LIST VARIABLES
1470 READ #2,1
1480 PRINT
1490 FOR I=1 TO V
1500 READ #2,A5,A5

```

```

1510 PRINT I;
1520 PRINT AS
1530 NEXT I
1540 PRINT LIN(1),"FOR MEANING OF ABBREVIATIONS, SEE YOUR MANUAL.",LIN(1)
1550 RETURN
1560 REM* THIS IS THE *SORT* ROUTINE.
1570 B=0
1580 PRINT LIN(1),"WHICH VARIABLE";
1590 INPUT V1
1600 IF V1 <= V THEN 1630
1610 PRINT LIN(1),"ENTER A NUMBER LESS THAN";V+1
1620 GOTO 1570
1630 PRINT "ALL COUNTRIES (YES OR NO)";
1640 INPUT NS
1650 IF NS(1,1)="Y" THEN 1730
1660 PRINT "HOW MANY";
1670 INPUT Q
1680 PRINT "TOP OR BOTTOM";
1690 INPUT NS
1700 IF NS(1,1)="T" THEN 1730
1710 LET B=1
1720 GOTO 1730
1730 READ #1,1
1740 FOR Y=1 TO C
1750 READ #1,Y;CS
1760 FOR X=1 TO V1
1770 READ #1,Z
1780 NEXT X
1790 LET R(Y)=Z
1800 NEXT Y
1810 REM* ALL VALUES FOR V1 ARE NOW IN R(Y). BEGIN SORT.
1820 PRINT LIN(1),"THIS WILL TAKE A MINUTE...PLEASE BE PATIENT.",LIN(1)
1830 FOR X=1 TO C
1840 LET T=0
1850 FOR Y=1 TO C
1860 IF R(Y)=999999. THEN 1880
1870 IF R(Y)>T THEN 1900
1880 NEXT Y
1890 GOTO 1930
1900 LET T=R(Y)
1910 LET TI=Y
1920 GOTO 1880
1930 LET O(X)=T
1940 LET P(X)=TI
1950 LET R(TI)=999999.
1960 NEXT X
1970 IF Q=0 THEN 2160
1980 IF B=1 THEN 2080
1990 REM* PRINT Q VALUES FROM THE TOP OF THE RANK-ORDERED LIST
2000 GOSUB 2210

```

```

2010 FOR Y=1 TO Q
2020 READ #1,P[Y];CS
2030 IF O[Y]=0 THEN 2060
2040 PRINT CS,
2050 PRINT O[Y]
2060 NEXT Y
2070 GOTO 200
2080 REM* PRINT Q VALUES FROM THE BOTTOM OF THE RANK-ORDERED LIST
2090 GOSUB 2210
2100 FOR I=C TO 1 STEP -1
2110 IF O[I]#0 THEN 2130
2120 NEXT I
2130 FOR Y=(I-Q+1) TO I
2140 GOTO 2020
2150 NEXT Y
2160 REM* PRINT ALL VALUES FOR VI FOR ALL COUNTRIES
2170 GOSUB 2210
2180 FOR Y=1 TO C
2190 GOTO 2020
2200 NEXT Y
2210 READ #2,I
2220 FOR X=1 TO 2*VI
2230 READ #2,AS
2240 NEXT X
2250 PRINT AS,LIN(I)
2260 RETURN
2270 END

```

LDTAB

```

10  FILES TABLE
20  REM: PROGRAM WRITTEN BY JUDY EDWARDS, NWREL, JUNE, 1975
30  REM: 'LDTAB' LOADS THE ENERGY USE DATA FOR EACH OF 83 COUNTRIES
40  REM: INTO THE 'TABLE' FILE (OPEN IT TO 85 RECORDS, OR UP TO 120
50  REM: IF YOU PLAN TO ADDMORE COUNTRIES).  SEE MANUAL FOR
60  REM: DIRECTIONS FOR ADDING MORE COUNTRIES TO THE FILE.
70  DIM AS(14),V(24)
80  IF END #1 THEN 1840
90  FOR Z=1 TO 83
110  READ AS
120  PRINT #1,Z;AS
130  FOR X=1 TO 24
140  READ V(X)
150  PRINT #1;V(X)
160  NEXT X
165  PRINT Z,AS,X,V(X-1)
170  NEXT Z
180  DATA "AFGHANISTAN",17.48,27,2.3,37.5,37.5,2060,0,0,2.4,3.54,.64,.47
190  DATA 39,27,85,135,0,0,0,0,0,2894,326,0
200  DATA "ALGERIA",14.769,6,3.5,50.7,50.7,1890,0,0,59.16,52.99,4.81,7.28
210  DATA 20,0,0,0,1235,50477.,3964,2894,1901,52
220  DATA "ARGENTINA",23.552,8,1.5,64.1,70.2,3160,18250,24500,30.56,37.62
230  DATA 41.75,1480,1773,450,675,0,0,344,22130,206,6183,23623,0
240  DATA "AUSTRALIA",12.723,2,1.9,67.9,74.2,3160,27075,32999.,48.82
250  DATA 75.78,60.7,68.21,5045,5359,16000,49056.,95600.,23630,208
255  DATA 16118,1069,2628,57099.,3466
260  DATA "AUSTRIA",7.456,89.,5,66.6,73.7,3230,0,14866,10.08,9.77,21.14,0
270  DATA 28.76,3231,3,0,143,3756,26,2478,16,1963,28748,1675
280  DATA "BELGIUM",9.673,317.,5,67.7,73.5,3230,18897,26474,15.02,11.18,0
290  DATA 61.57,5237,6116,1796,10500,0,0,0,0,0,52,31597,2979
300  DATA "BOLIVIA",5.063,5,2.6,49.7,49.7,1760,792,1000,2.64,2.46.,.96
310  DATA 1.13,204,224,0,0,0,0,28,2030,139,40,830,0
320  DATA "BRAZIL",95.468,11,2.8,60.7,60.7,2820,26914,40000.,17.66,20.399
330  DATA 47.7,446,500,10675,2497,0,0,104,8179,26,1242,50988.,419
340  DATA "BULGARIA",8.54,77.,7,68.8,72.7,3070,0,0,16.03,14.8,27.74,34.41
350  DATA 3315,4029,1147,384,1117,26894,38,248,28,220,21016,0
360  DATA "BURUNDI",3.615,130,2,35,38.5,2330,160,200,0,0,.03,.04,8,11,0,0
370  DATA 0,0,0,0,0,21.5,0
380  DATA "CANADA",21.595,2,1.6,68.8,75.2,3200,58979.,81421.,161.22
390  DATA 223.7,167.97,201.38,8086,9326,61000.,15810,24100,2978,1080,7299
400  DATA 1499,82503.,216472.,2289
410  DATA "CHAD",3.8,3,2.3,29.35,2240,0,0,0,0,.06,.1,18,27,0,0,0,0,0,0
420  DATA "CHILE",8.992,12,1.4,54.4,59.9,2560,4829,5100,6.85,9.08,10.76
430  DATA 15.09,1151,1516,218,1332,5365,0,16,1613,71,4080,8524,0
440  DATA "CHINA",787.176,82,1.8,50.50,2050,0,0,0,0,0,0,0,0,1.011E+06,409
450  DATA 700,0,1709,29600,99,0,0,0
460  DATA "COLOMBIA",21.772,19,3,2.44,2.46,2140,6030,8700,0,0,0,0,0,0,128
470  DATA 2800,0,0,226,10134,73,1563,8750,146
480  DATA "CUBA",8.657,76,2.3,66.8,66.8,2500,0,0,.17,.26,8.43,9.97,1044,8
490  DATA 0,0,0,0,0,117,0,0,4072,77
500  DATA "CZECHOSLOV.",14.5,113.,4,67.3,73.6,3030,0,0,72.99,81.79,82.769

```

510 DATA 5762,6615,11573,27925,9857,85566.,0,191,11,1167,47237.,7435
 520 DATA "DENMARK",4.963,115.,7,70.8,75.7,3250,11290,15834.,25,0,22.83
 530 DATA 26.45,4692,5327,0,0,50,0,33,73,14,0,17540,398
 540 DATA "DOM. REPUB.",4.182,86,2.9,57.2,58.6,2080,1074,1513.,01.,01.,84
 550 DATA 1.1,209,264,0,0,0,0,0,0,0,1052,0
 560 DATA "ECUADOR",6.297,22,3.4,51,53.7,1970,1270,1610.,36.,31,1.49,1.98
 570 DATA 261,315,0,0,0,0,834,4016,122,14,1050,0
 580 DATA "EGYPT",34.13,34,2.5,51.6,53.8,2770,5986,7000,11.52,19.81,9.54
 590 DATA 9.69,301,282,0,0,0,0,531,10630,108,85,7591,0
 600 DATA "EL SALVADOR",3.647,170,3.7,56.6,60.4,1850,864,1009.,05.,06.,68
 610 DATA 194,223,0,0,0,0,0,0,0,0,743,0
 620 DATA "ETHIOPIA",25.248,21,1.8,38.5,38.5,1980,1387,1750.,03.,03.,55.8
 630 DATA 23,32,0,0,0,0,0,0,0,0,585,0
 640 DATA "FINLAND",4.684,14.,4,65.4,72.6,2940,7322,10195,1.31,1.31
 650 DATA 16.34,20.3,3484,4334,0,0,0,0,0,0,0,20842,51
 660 DATA "FRANCE",51.25,94.,9,68.6,76.1,3270,114427.,132344.,61.87,54.22
 670 DATA 163.95,201.48,3282,3928,2800,29763,30,2962,13,1484,187
 675 DATA 7517,148998.,6492
 680 DATA "GERMANY",75.129,194.,7,67.6,73.6,3180,0,194147.,165.07,175.518
 690 DATA 320.06,4488,5223,70000.,102707.,30000,248451.,71,7098,351,16928
 700 DATA "GHANA",8.858,37,3,46,46,2070,1849,2485.,32.,36,1.06,1.65,126.2
 710 DATA 0,0,0,0,0,0,0,0,0,2944,0
 720 DATA "GREECE",8.85,67.,5,67.5,70.7,2900,3,8877,2.1,3.92,9.04,13.01
 730 DATA 1027,1470,0,0,1575,11318,0,0,0,0,8427,8
 740 DATA "GUATEMALA",5.348,49,3,1,48.3,49.7,2020,1489,1889.,02.,03,1.172
 750 DATA 241,250,0,0,0,0,0,0,0,0,780,0
 760 DATA "GUINEA",4.01,16,2.2,26,28,2060,282,315,0,0.,37.,43
 770 DATA 99,108,0,0,0,0,0,0,0,0,450,0
 780 DATA "HAITI",4.969,179,2,44.5,44.5,1930,402,500,0,0.,13.,14,28,29
 790 DATA 0,0,0,0,0,0,0,0,115,0
 800 DATA "HONG KONG",4.045,3912,2.1,66.7,73.3,2370,6000,1519,0,0,2.95
 810 DATA 4.21,777,1040,0,0,0,0,0,0,0,0,5574,61
 820 DATA "HUNGARY",10.351,111.,5,66.3,72.7,2190,0,0,21.75,23.24,28.93,34
 830 DATA 2837,3291,714,3671,5679,22171,30,1977,119,4110,14990,973
 840 DATA "INDIA",550.374,168,2.2,41.9,40.6,1990,0,46219.,82.74,84.91,948
 850 DATA 102.52,185,186,106260.,74771.,2063,3067,90,7486,44,693,60352.,0
 860 DATA "INDONESIA",124.894,84,2.8,47.5,47.5,1920,0,10828,43.41,62.33,8
 870 DATA 15.39,103,123,845,179,2000,0,1466,54080.,156,4126,2084,33
 880 DATA "IRAN",29.783,18,3,50,50,2030,0,9764,186.62,317.29,13.17,26.668
 890 DATA 895,1000,1000,0,0,8515,248498.,5656,17185,8309,0
 900 DATA "IRAQ",9.75,22,3.2,51.6,51.6,2050,0,2547,96.89,110.07,5.49,6.38
 910 DATA 650,0,0,0,0,4433,71125.,566,870,1929,0
 920 DATA "ISRAEL",3.013,146,3,70.1,73.4,2990,0,4761,2.97,8.23,5.53,8.16
 930 DATA 2015,2710,0,0,0,0,0,6048,1,124,7639,0
 940 DATA "ITALY",54.078,180.,8,67.9,73.4,3020,0,93508.,23.29,26.26,119.6
 950 DATA 145.04,2267,2682,0,151,524,839,35,1152,170,14142,124860.,2894
 960 DATA "IVORY COAST",4.42,14,2.4,41,41,2430,1193,1410.,03.,02.,65,1.17
 970 DATA 158,265,0,0,0,0,0,0,0,0,588,0
 980 DATA "JAPAN",104.661,283,1.1,69.1,74.3,2470,0,198885.,59.81,49.47,28
 990 DATA 341,9,2519,3267,19248,28098,1733,102,3,711,8,2428,385612.,5042
 1000 DATA "KENYA",11.694,20,3,1,47.5,47.5,2200,1208,1598.,03.,04,1.48,20
 1010 DATA 140,171,0,0,0,0,0,0,0,0,555,0
 1020 DATA "KOREA",46.198,210,2.4,57.7,57.7,2270,0,8455,10.36,12.95,17.75

1030 DATA 27.94,582,860,0,0,5,0,0,0,0,0,10952,0
 1040 DATA "LAOS",3.033,13,2.4,47.5,47.5,2040,0,153,0,0,.08,.28,30,91
 1050 DATA 0,0,0,0,0,0,0,0,16,1,0
 1060 DATA "W. MALAYSIA",8.978,68,2.4,63.8,66.7,2190,0,2783,.1,.13,3.73,8
 1070 DATA 425,453,0,0,0,0,196,4432,0,0,3574,0
 1080 DATA "MALI",5.143,4,2.1,37.2,37.2,2130,0,0,0,0,.1,.13,21,25
 1090 DATA 0,0,0,0,0,0,0,0,44,2,0
 1100 DATA "MEXICO",50.83,26,3.2,61,63.7,2620,25663,36000,.53,69,59,2
 1110 DATA 53.36,64.7,1129,1270,3466,2170,0,0,389,22163,305,18694,31322,0
 1120 DATA "MOROCCO",15.238,34,2.2,50.5,50.5,2130,2953,3660,.72,.76,2.718
 1130 DATA 186,205,96,547,0,0,0,28,0,52,2085,0
 1140 DATA "NETHERLANDS",13.194,323,1.2,70.7,76.5,3200,0,33555,.28,22,646
 1150 DATA 52.44,66.89,4121,5069,2394,2812,0,0,39,1597,2209,58385,.449048
 1160 DATA "NEPAL",11.29,80,1.8,40.6,40.6,2030,0,887,0,.01,.12,.1,12,9
 1170 DATA 0,0,0,0,0,0,0,0,60,0
 1180 DATA "NIGER",4.126,3,2.7,41,41,2170,369,0,0,0,.07,.09,18,22
 1190 DATA 0,0,0,0,0,0,0,0,38,3,0
 1200 DATA "NIGERIA",56.51,61,2.5,37.2,36.7,2290,4024,4750,9.48,99.81,1.3
 1210 DATA 3.33,33,59,350,341,73,0,1729,90914,.1161,159,1820,0
 1220 DATA "NORWAY",3.903,12,.8,71.1,76.8,2940,0,11181,7.8,8.67,16.24,208
 1230 DATA 4254,5189,166,455,0,0,462,1626,439,0,62930,.182
 1240 DATA "PAKISTAN",116.598,140,16.7,53.7,48.8,2410,0,14738,5.08,7.31,0
 1250 DATA 12.88,87,96,1661,1251,280,0,5,455,547,3795,7068,0
 1260 DATA "PERU",14.015,11,3.1,52.6,55.5,2260,0,4933,6.01,5.27,8.24,8.78
 1270 DATA 621,2334,92,4630,0,68,3194,74,480,5324,0
 1280 DATA "PHILLIPINES",37.919,126,3,48.8,53.4,2040,0,8899,.25,.37,9.458
 1290 DATA 272,298,0,39,88,0,0,0,0,0,8666,22
 1300 DATA "POLAND",32.749,105,.8,66.9,72.8,3140,0,0,140.88,163.8,123.67
 1310 DATA 143.24,3828,4374,45741,.150697,.14862,38221,.7,347,0,0,69887.8
 1320 DATA "PORTUGAL",9.037,98,0,65,3,71,2920,0,7214,1.06,1.02,5.12,7.148
 1330 DATA 26,252,26,8,0,0,0,0,7815,125
 1340 DATA "ROMANIA",20.47,86,1.1,65.5,69.8,3010,0,0,52.87,62.78,47.1,609
 1350 DATA 2388,2975,590,6612,1367,16547,198,14128,0,0,39454,.522
 1360 DATA "RWANDA",3.827,145,2.9,41,41,1900,163,266,.01,.01,.03,.04,10,0
 1370 DATA 0,0,0,0,0,0,0,0,34,0
 1380 DATA "SA. ARABIA",7.965,4,2.7,42.3,42.3,2080,0,2517,186.18,295.35,8
 1390 DATA 7.87,625,988,0,0,0,0,18658,285583,.0,0,805,0
 1400 DATA "SENEGAL",4.022,21,2.4,41,41,2300,782,718,0,0,.55,.52,149
 1410 DATA 129,0,0,0,0,0,0,0,0,303,0
 1420 DATA "SO. AFRICA",22.092,18,3.1,49,49,2730,12340,16567,51.77,58.83
 1430 DATA 59.04,71.71,2718,2895,72465,.58440,.0,0,0,0,0,0,52717,.1800
 1440 DATA "S. RHODESIA",5.5,14,3.3,51.4,51.4,2550,1085,1533,3.57,3.75,27
 1450 DATA 3.4,560,618,6613,2762,0,0,0,0,0,6800,0
 1460 DATA "SPAIN",34.134,68,1.1,67.3,71.9,2770,0,34073,.16,99,16.54,41.8
 1470 DATA 55.08,1266,1614,0,11160,780,3070,9,143,0,0,61917,.2387
 1480 DATA "SRI LANKA",12.762,195,2.3,61.9,61.4,2340,0,2005,.06,.1,1.37
 1490 DATA 2.07,114,163,0,0,0,0,0,0,0,900,6
 1500 DATA "SUDAN",16.087,6,2.8,47.6,47.6,2090,0,1701,.01,.01,1.35,1.91,9
 1510 DATA 119,0,0,0,0,0,0,0,0,259,0
 1520 DATA "SWEDEN",7.604,.18,.8,71.9,76.5,2850,0,32698,6.12,6.51,42.59,8
 1530 DATA 5379,6089,90,0,0,0,0,0,0,0,66549,.511
 1540 DATA "SWITZERLAND",6.324,153,1.2,68.7,74.1,3190,0,17954,3.67,4.01
 1550 DATA 18.56,22.63,3009,3575,0,0,0,0,0,0,0,32785,.383
 1560 DATA "SY ARAB REP",6.451,35,3.3,52.8,52.8,2450,0,1589,1.09,6.88
 1570 DATA 2.47,3.13,421,485,0,0,0,0,182,5862,0,0,1049,0

1580 DATA "THAILAND",35.335,69,2.7,53.6,58.7,2210,0,6406,.28,.39,6.87
 1590 DATA 10.47,204,296,0,0,0,345,0,13,0,0,4545,0
 1600 DATA "TURKEY",36.11,46,2.5,53.7,53.7,2760,0,12249,10.55,11.01,15.12
 1610 DATA 18.65,451,516,1335,4641,1881,5336,20,3410,0,0,9781,726
 1620 DATA "UGANDA",10.127,43,2.7,47.5,47.5,2160,893,1040,.09,.15,.73,8
 1630 DATA 72,0,0,0,0,0,0,0,0,0,817,0
 1640 DATA "UN. KINGDOM",55.566,228,.4,67.8,73.8,3170,0,125735,.173.71
 1650 DATA 176.01,274.83,306.68,4961,5507,15500,119500,.0,0,716,83,0,0,20
 1660 DATA "TANZANIA",13.634,14,2.6,40,41,1700,1036,1277,.03,.05
 1670 DATA .65,.93,53,70,370,3,0,0,0,0,0,0,422,0
 1680 DATA "U. S. A.",207.05,22,1.1,71.1,71.1,3300,782035,.946778,.1876.060
 1690 DATA 10398,11244,1.11E+06,535242,.406000,.6169,4899,466956,.0,0,1.0
 1700 DATA "U. S. S. R.",245.091,11,1.1,65,74,3180,0,0,1087.45,1250.26,965.8
 1710 DATA 4050,4535,1.40638E+06,152467,.5716,400440,.0,0,0,0,800360,.332
 1720 DATA "UPPER VOLTA",5.491,20,2.1,32.1,36.1,2060,301,0,0,0,.05,.07,10
 1730 DATA 13,0,0,0,0,0,0,0,0,0,33,0
 1740 DATA "VIET NAM",40.404,123,2.5,50,50,2000,0,2841,0,0,5.54,5.46,3182
 1750 DATA 1000,0,0,0,0,0,0,0,0,1215,0
 1760 DATA "YEMEN",5.9,30,2.7,42.3,42.3,2020,0,0,0,0,.56,.94
 1770 DATA 411,639,0,0,0,0,0,0,0,0,6.2,0
 1780 DATA "YUGO SLAVIA",20.55,80,1.64,3.68,9,3130,0,0,19.3,23.13,25.21,30
 1790 DATA 1259,1608,319,599,26600,30341,48,3200,0,0,29509,169
 1800 DATA "ZAIRE",22.477,10,4.2,37.6,40,2040,1154,2150,.4,.56,1.42,1.737
 1810 DATA 77,73,123,0,0,0,0,0,0,0,378,0
 1820 DATA "ZAMBIA",4.275,6,2.9,43.5,43.5,2250,1229,1421,.61,.89,2.26,1.0
 1830 DATA 458,115,959,0,0,0,0,0,0,0,1168,0
 1840 END

LDLIST

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10 FILES LIST
20 REM: PROGRAM WRITTEN BY JUDY EDWARDS, NWREL, JUNE, 1975
30 REM: 'LDLIST' LOADS THE LIST OF COUNTRIES AND THE LIST OF VARIABLES
40 REM: INTO THE 'LIST' FILE (OPEN IT TO 14 RECORDS, OR AS MANY AS YOU
50 REM: NEED IF YOU ARE GOING TO ADD TO THE LISTS). 'LDLIST' ALSO
60 REM: LOADS THE INSTRUCTIONS AT THE END OF THE 'LIST' FILE.
70 REM: SEE MANUAL FOR DIRECTONS FOR ADDING TO THE LISTS.
80 C=83
90 V=24
100 DIM A$(72),B$(2)
110 IF END #1 THEN 850
120 READ #1,1
130 FOR Z=1 TO V
140 READ A$,B$
150 PRINT #1;A$,B$
160 NEXT Z
170 READ #1,7
180 FOR Z=1 TO C
190 READ A$
200 PRINT #1;A$
210 NEXT Z
220 READ #1,10
230 FOR Z=1 TO 17
240 READ A$
250 PRINT #1;A$
260 NEXT Z
270 DATA "71 POP.          ","1971 POPULATION IN MILLIONS          "
280 DATA "71 DENS.          ","1971 POPULATION DENSITY/SQ. KM.          "
290 DATA "POP. INCR          ","1963-1971 POPULATION INCREASE (%)          "
300 DATA "MALE EXP.          ","MALE LIFE EXPECTANCY          "
310 DATA "FEM. EXP.          ","FEMALE LIFE EXPECTANCY          "
320 DATA "CAL. CONS          ","CALORIE CONSUMPTION PER DAY PER CAPITA          "
330 DATA "68 INCOME          ","1968 NATIONAL INCOME (MILLIONS OF $$)          "
340 DATA "71 INCOME          ","1971 NATIONAL INCOME (MILLIONS OF $$)          "
350 DATA "68 EN PRO          ","1968 ENERGY PRODUCED (M.M.T.C.E.)          "
360 DATA "71 EN PRO          ","1971 ENERGY PRODUCED (M.M.T.C.E.)          "
370 DATA "68 EN CON          ","1968 ENERGY CONSUMED (M.M.T.C.E.)          "
380 DATA "71 EN CON          ","1971 ENERGY CONSUMED (M.M.T.C.E.)          "
390 DATA "68 EN/CAP          ","1968 ENERGY CONSUMED PER CAPITA (KG.)          "
400 DATA "71 EN/CAP          ","1971 ENERGY CONSUMED PER CAPITA (KG.)          "
410 DATA "COAL RES.          ","COAL RESERVES (M.M.T.)          "
420 DATA "COAL PRO.          ","1972 COAL PRODUCED (T.M.T.)          "
430 DATA "LIGN. RES          ","LIGNITE & BROWN COAL RESERVES (M.M.T.)          "
440 DATA "LIGN. PRO          ","1972 LIGNITE & BROWN COAL PRODUCED (T.M.T.)          "
450 DATA "PETRO RES          ","1972 PETROLEUM RESERVES (M.M.T.)          "
460 DATA "PETRO PRO          ","1972 PETROLEUM PRODUCED (T.M.T.)          "
470 DATA "N GAS RES          ","1972 NATURAL GAS RESERVES (1000 M.C.M.)          "
480 DATA "N GAS PRO          ","1972 NATURAL GAS PRODUCED (M.C.M.)          "
490 DATA "EL EN PRO          ","1971 ELECTRICAL ENERGY PRODUCED (M.KWH.)          "
500 DATA "M GAS PRO          ","1971 MANUFACTURED GAS PRODUCED (M.C.M.)          "

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510 DATA "AFGHANISTAN", "ALGERIA", "ARGENTINA", "AUSTRALIA", "AUSTRIA"
 520 DATA "BELGIUM", "BOLIVIA", "BRAZIL", "BULGARIA", "BURUNDI", "CANADA"
 530 DATA "CHAD", "CHILE", "CHINA", "COLOMBIA", "CUBA", "CZECHOSLOVAKIA"
 540 DATA "DENMARK", "DOMINICAN REPUBLIC", "ECUADOR", "EGYPT", "EL SALVADOR"
 550 DATA "ETHIOPIA", "FINLAND", "FRANCE", "GERMANY", "GHANA", "GREECE", "GUATEMALA"
 560 DATA "GUINEA", "HAITI", "HONG KONG", "HUNGARY", "INDIA", "INDONESIA", "IRAN"
 570 DATA "IRAQ", "ISRAEL", "ITALY", "IVORY COAST", "JAPAN", "KENYA", "KOREA"
 580 DATA "LAOS", "WEST MALAYSIA", "MALI", "MEXICO", "MOROCCO", "NETHERLANDS"
 590 DATA "NEPAL", "NIGER", "NIGERIA", "NORWAY", "PAKISTAN", "PERU", "PHILIPPINES"
 600 DATA "POLAND", "PORTUGAL", "ROMANIA", "RWANDA", "SAUDI ARABIA", "SENEGAL"
 610 DATA "SOUTH AFRICA", "SOUTHERN RHODESIA", "SPAIN", "SRI LANKA", "SUDAN"
 620 DATA "SWEDEN", "SWITZERLAND", "SYRIAN ARAB REPUBLIC", "THAILAND", "TURKEY"
 630 DATA "UGANDA", "UNITED KINGDOM", "UN. REP. OF TANZANIA", "U.S.A."
 640 DATA "U.S.S.R.", "UPPER VOLTA", "VIET NAM", "YEMEN", "YUGOSLAVIA"
 650 DATA "ZAIRE", "ZAMBIA"
 660 DATA "THE 'EARTH' PROGRAM OFFERS 5 OPTIONS. THEY ARE--"
 670 DATA "TABLE: THE COMPUTER WILL PRINT A TABLE SHOWING THE"
 680 DATA "VALUES OF UP TO 5 VARIABLES FOR UP TO 83 COUNTRIES."
 690 DATA "FIND THE LIST OF VARIABLES AND THE LIST OF COUNTRIES IN"
 700 DATA "YOUR MANUAL (PP. XX AND XX) OR USE THE 'LIST' OPTION."
 710 DATA "THESE LISTS GIVE YOU THE CODE NUMBER YOU SHOULD ENTER"
 720 DATA "FOR EACH VARIABLE AND EACH COUNTRY."
 730 DATA "LIST: THE COMPUTER WILL PRINT A LIST OF ALL VARIABLES"
 740 DATA "OR ALL COUNTRIES IN THE FILE."
 750 DATA "RANK: THE COMPUTER WILL RANK THE VALUES FOR A GIVEN VARIABLE"
 760 DATA "AND PRINT THOSE VALUES IN RANK ORDER FROM HIGHEST TO LOWEST."
 770 DATA "YOU CAN ASK FOR THESE VALUES FOR ALL COUNTRIES, OR YOU CAN"
 780 DATA "SPECIFY A NUMBER OF COUNTRIES FROM THE TOP OR BOTTOM OF THE LIST"
 790 DATA "COUNTRIES FOR WHICH NO INFORMATION IS AVAILABLE WILL BE OMITTED"
 800 DATA "HELP: THE COMPUTER WILL PRINT THIS LIST OF OPTIONS AGAIN"
 810 DATA "STOP: TO END THE PROGRAM, TYPE 'STOP'."
 820 DATA ""
 830 DATA ""
 840 DATA ""
 850 END